Hospital Responses to the Leapfrog Group in Local Markets

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Abstract:
The Leapfrog (LF) initiative, directed at improving patient safety in hospitals, may be the most ambitious, coordinated attempt to date on the part of large employers to shape the delivery of health care in America. This article assesses the role of market conditions and other factors in influencing hospital responses to LF activities at the community level. Community characteristics were found to be important in explaining hospital participation in a LF safety standards survey at the study sites. However, characteristics of the individual hospitals, and of the LF goals themselves, were more important in explaining the relatively limited progress by hospitals across all sites in achieving those goals over a 5-year period.
Keywords: The Leapfrog Group; patient safety; hospitals; health care coalitions; quality improvement; health reform; hospital competition

Article:

In response to an Institute of Medicine report on building a safer health system (Committee on Quality of Health Care, 2000), several large employers formed the Leapfrog Group (LF) in November 2000. The objective of the group was to improve the quality and safety of medical care. LF identified three potential "leaps" forward in the area of patient safety that were directed specifically at hospitals: "computer physician order entry" (CPOE) for medications in hospitals, the use of intensivists in hospital intensive care units, and referring patients to hospitals that meet volume (or outcomes where available) thresholds and process standards (The Leapfrog Group, 2007). They chose these particular leaps because they believed they were supported by research, their adoption could make a measurable improvement in safety, and because the leaps had intuitive appeal to the general public.

The leaps were controversial, sparking a lively debate at the national level concerning whether they represented the best allocation of scarce hospital resources to achieve substantial and immediate gains in patient safety. Although the quality of the research base for the leaps and their feasibility were questioned by the American Hospital Association (AHA) and other hospital groups (Lovern, 2001), LF quickly attracted many large employers and employer coalitions to its cause. By late 2001, it had 84 participating purchaser members ("frogs") representing 26 million covered lives and expenditures of $45 billion annually on medical care (Sandrick, 2001).

Spurred by its growing membership and an increasingly complex set of activities, LF established various committees ("lily pads") to carry out tasks, one of which was the implementation of LF's "regional strategy." It initiated its Regional Rollout (RRO) effort in March 2001, with the identification of seven communities or regions in which individual purchasers or purchaser coalitions agreed to lead coordinated efforts around the three leaps (Seattle/Tacoma, California, Minnesota, St. Louis, Eastern Tennessee, Atlanta, and Michigan.). In March 2002, 12 additional RRO sites were selected. Subsequently, the designation of RRO sites proceeded at a slower pace, but by March 2006, there were 31 RRO markets containing approximately 57% of all urban hospitals in the United States (The Leapfrog Group, 2006).

New Contribution

It is not an exaggeration to say that LF is the most ambitious coordinated attempt, to date, on the part of large employers to reshape health care in America. Given the scope and visibility of LF, as well as the significance of the problems it sought to address, it is important to understand the factors that have influenced hospital responses to LF efforts at the community level. We examine the role of market conditions and other factors in influencing the willingness of hospitals to support LF's efforts and report their status with respect to three LF goals, as well as the progress of hospitals over time in achieving these goals.

Leapfrog Regional Rollout Logic Model

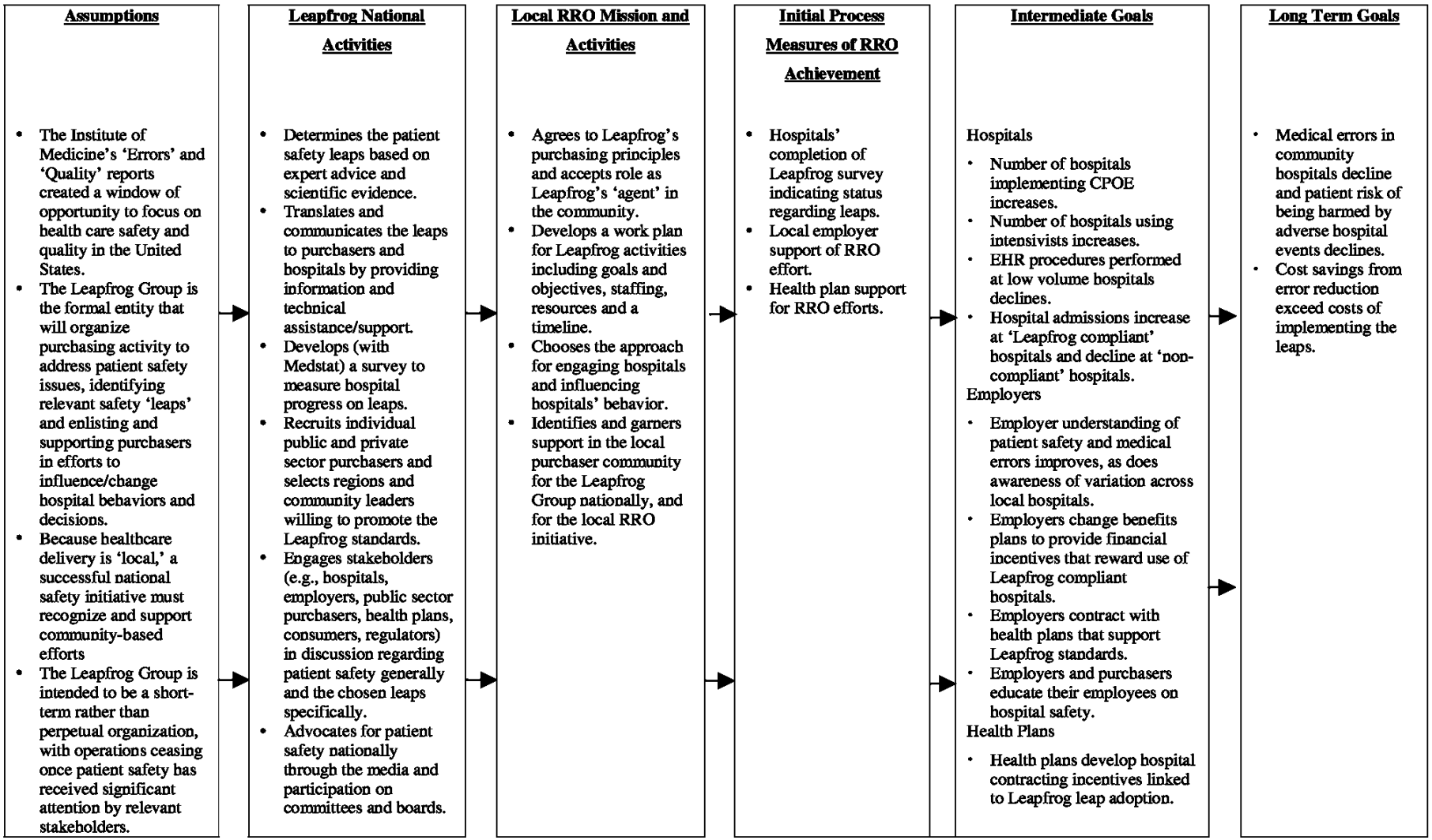
Based on a review of early LF documents, materials used to recruit purchasers to be RRO leaders, and interviews we conducted with LF leaders at the national level, we constructed a "logic model" that incorporates the assumptions, activities, and expected short-term, intermediate, and long-term outcomes underlying the Leapfrog Regional Rollout (LF RRO) strategy (see Figure 1). As the figure illustrates, a key function envisioned for LF's national office was to provide information and technical assistance to local employers, who would use their community influence and purchasing power to engage hospitals, health plans, and other employers in efforts to improve safety. Specifically, local RRO leaders were expected to encourage hospitals to support the LF RRO by completing periodic surveys in which they "self-reported" their status with respect to achieving the LF leaps. Employers and health plans then would communicate the survey results to employees and the general public. The assumption was that consumers would use this evidence on patient safety when choosing a hospital, thereby creating pressure on hospitals to improve their performance on the leaps. Employers and their health plans were expected to support this process by implementing health benefit designs that provided financial incentives and rewards for employees to use leap-compliant hospitals. As more hospitals met LF standards, in an attempt to attract and retain patients, LF expected that the number of medical errors in local health care systems would decline, patient outcomes would improve, and cost savings would be realized.

Factors Expected to Influence Hospital Responses

While the LF logic model clearly anticipated that responses to LF rollout efforts would vary across communities and hospitals, it did not explicitly identify the potential determinants of that variation. However, the substantial literature on health care reform efforts at the community level suggests several community characteristics that are likely to play an important role in the success of RRO efforts (Anderson, Herold, Buler, Kohrman, &Morrison, 1985; Bazzoli, Stein, Alexander, & Conrad, 1997; Bogue, Anita, Harmata, & Hall, 1997; Bolland & Wilson, 1994; Borland, Smith, & Nankivil, 1994; Brown et al., 1990; Christianson, Dowd, Kralewski, Hayes, & Wisner, 1995; Christianson & Feldman, 2005; Dowd, Coulam, & Feldman, 2000; Emanuel & Titlow, 2002; Gitterman, Weiner, Domino, McKethan, & Enthoven, 2003; McLaughlin, 1995; Miller, 1994; Shortell et al., 2002; Weiner & Alexander, 1998; Wholey & Burns, 2003; Wholey, Christianson, Draper, Lesser, & Burns, 2004; Wickizer et al., 1998). Several accounts in this literature focused on provider participation in, or resistance to, efforts to change local health care systems (see Brown et al., 1990; Christianson & Feldman, 2005; Christianson, Feldman, Weiner, & Drury, 1999). Typically these studies analyzed attempts on the part of employers or health plans to negotiate with providers over network design and participation, elicited support for community quality improvement efforts, or influenced plans for mergers and consolidations (Christianson, 1998; Christianson & Trude, 2003; Devers, Brewster, & Casalino, 2003; Lee, Alexander, & Bazzoli, 2003; Lipson & DeSa, 1996).

Because a key objective of the LF RRO effort was to engage hospitals in the public reporting of progress on patient safety goals, the literature on public performance reporting in the health care sector is also germane to our study. While there are few analyses of the decisions of health care organizations and providers to voluntarily report performance data, most of the published literature has addressed the decisions of health maintenance organizations (HMOs) to report the Health Plan Employer Data and Information Set (HEDIS) and Consumer Assessment of Healthcare Providers and Systems (CAHPs) performance measures to the National Committee for Quality Assurance (McCormick, Himmelstein, Woolhander, Wolfe, & Bor, 2002; Scanlon et al., 2006).

Figure 1
Leapfrog Regional Rollout (RRO) Logic Evaluation Model*+



*Patterned after Chen, Cato, and Rainford (1999).

+Based of Leapfrog's initial three safety leaps.

In addition, there is a sizeable and growing literature on the use of "report card" or "performance" information by consumers to make decisions (see Abraham, Feldman, & Carlin, 2005; Chernew, Gowrisankaran, & Scanlon, 2001; Chernew & Scanlon, 1998; Feldman, Christianson, & Schultz, 2000; Hibbard, Stockard, & Tusler, 2005; Schultz, Call, Feldman, & Christianson, 2001; Scanlon, Chernew, McLaughlin, & Solon, 2002). However, this literature is less relevant to the current study except for the possibility that hospitals may view public demands for patient safety information as a reason to report data to LF.

Based on our review of the literature, we expected hospital responses to RRO efforts in their communities to be influenced by factors that can be grouped into three broad categories: community-level factors, factors related to individual hospitals, and the characteristics of the leaps themselves.

Community-Level Factors

We hypothesized that three community characteristics will have the greatest impact on the success of RRO efforts: breadth and depth of employer involvement, hospital market structure, and historical relations among employers and community health care providers.

Breadth and depth of employer involvement

Employer involvement in and commitment to the LF RRO in their communities is likely to be an important influence on hospital responses, as is the number of community residents receiving health benefits through those committed employers. Hospitals are likely to be more responsive if they believe there is broad-based, organized employer support, or if one or more high-profile employers (with a large number of employees in the community) are actively and publicly supportive of LF. These employers could affect the distribution of admissions among hospitals by communicating information about hospital performance on LF leaps or by restructuring their health benefit designs, including using reimbursement to reward hospitals that meet LF standards. If this were the case, hospitals would be more likely to view support of RRO activities as necessary to maintain or grow market share. They would be more likely to collaborate in LF implementation, report their progress through the LF hospital survey, and devote resources to meeting LF standards.

Hospital market structure

The degree of consolidation of local hospital markets is likely to affect hospital responses, along with the presence of community hospital associations or councils. Hospitals in communities where there is substantial consolidation or high occupancy rates may be less likely to respond to LF demands, perceiving their long-run market positions to be relatively secure. They would be less concerned about any advantage that competitors might secure through cooperation with LF. Also, hospitals may be more likely to resist LF efforts in communities with existing organizational structures involving all local hospitals, such as a local hospital association. The existence of these structures decreases the costs of organizing a collective hospital response to the LF RRO and makes it easier to enforce such a response.

Historical relations. It is likely that RRO communities will vary in their history of employer–hospital relations. These relations might involve employer joint-purchasing negotiations with hospitals, collaboration over the collection and reporting of performance data, or even prior initiatives around reduction in medical errors in hospitals. In any case, the LF RRO effort would "enter the picture" at different points in the evolution of these relations. Hospitals might be less inclined to support the RRO if they had successfully resisted or defused employer-led change initiatives in the past. They would be more likely to collaborate with employers in implementing the LF leaps if they had engaged in prior collaborative efforts around quality improvement or patient safety that they perceived to be constructive and valuable. The existence of ongoing collaborative structures also would reduce the costs to both hospitals and employers of organizing around the RRO.

Hospital and Leap Characteristics

In addition to community-level factors, individual hospital characteristics, in conjunction with the distinct demands associated with the individual leaps, could lead to variation in hospital support of LF and progress toward leap adoption. The volume-related standards advocated by LF initially generated the most concern

among hospitals; the standards were criticized as having a weak basis in research and as leaving hospitals with very limited options (Conn, 2007; Florida Hospital Association, 2007; Peterson, Coombs, DeLong, Haan, & Ferguson, 2004). (Studies relating to this leap include Birkmeyer, 2000; Dudley, Johansen, Brand, Rennie, & Milstein, 2000; Luft, Bunker, & Enthoven, 1979; Luft, 1980; Luft et al., 1986; Maerki, Luft, & Hunt, 1986.) Also, compliance with the evidence-based hospital referral standards could have significant long-run implications for a hospital's service-line competition with other community hospitals and for its relations with medical staff. Smaller, independent, community-based hospitals may not offer a service targeted by the leaps, or may be less likely to meet the volume standards when offering the service. In contrast, hospital systems might be able to consolidate service lines so that some system hospitals met volume standards.

The intensivist leap generated much less concern; the hospital "business case" for this leap seemed stronger, as did the case for potential improvements in quality of care (see Pollack, Katz, Ruttimann, & Getson, 1988; Pronovost, Young, Dorman, Robinson, & Angus, 1999; Pronovost et al., 2002). One major concern, however, was that a shortage of trained intensivists could drive up the cost to a hospital of meeting this leap, at least in the short run. In addition, implementing intensivist staffing often required negotiations with existing medical staff who were used to caring for, and billing for, their own patients in the ICU.

The computer physician order entry (CPOE) leap was very controversial, primarily because of the high costs to an individual hospital of acquiring this technology and reported difficulties in installing CPOE, including "pushback" by hospital medical staff (Conn, 2007; Gater, 2005). Hospitals argued that there were less expensive, and potentially more effective, means of improving the safety of medication ordering, such as bar coding for example. But LF maintained its promotion of CPOE because it necessitated that hospitals move toward implementing clinical information systems and because clinical decision support at the time orders are made can both reduce mistakes and improve evidence-based care. Hospitals also suggested that taking full advantage of CPOE required integrating it with an electronic medical records system, including integration with laboratory data, diagnostic imaging, access to records by physicians from outside the hospital, and so forth. For the many hospitals lacking such a system, achieving a successful CPOE installation would require a major strategic investment and a significant amount of time. This suggests that larger hospitals, and hospitals that are part of systems, might be in a better position to meet the CPOE leap because of their greater ability to access needed funds and leverage economies of scale when purchasing. (Studies related to CPOE and early experience with its implementation include Bates et al., 1998; Bates et al., 1999; Cutler, Feldman, & Horwitz, 2005; Koppel et al., 2005; Kuperman & Gibson, 2003; Poon et al., 2004; Teich et al., 2000.) Finally, even though LF standards initially were meant to apply only to urban hospitals, rural hospitals expressed concerns that this LF policy risked unintentionally signaling that the quality of care in rural facilities was inferior because rural hospitals were less likely to have implemented the recommended practices.

Method

We employed a multisite case study design to address our research questions, using data from existing secondary data sources and conducting key informant interviews at each site. In this section, we describe the site and respondent selection, development of the key informant interview protocols, process for data collection and analysis, and limitations associated with the multi-site case study.

Site Selection

We selected seven RRO sites for our analysis: three sites (Atlanta, St. Louis, and Seattle) from the first wave (2001) of RRO communities and four (Dallas/Ft. Worth [DFW], TX; Rochester, NY; Savannah, GA; and Madison, WI [later expanded to include most of the state]) from the second wave (2002). We sought study sites that were diverse with respect to region, type of employer leadership (individual employer versus coalition), and size. We split our sample between wave one and wave two sites to allow for the possibility that hospital responses in the "groundbreaking" initial wave of sites could differ from responses in subsequent RRO sites. For example, it is possible that hospitals would be more hesitant to participate in the first round of a new national initiative than in the second round. Choosing sites from the first two waves also allowed us to observe

hospital survey completion and progress toward achieving LF goals for the longest period possible. Table 1 lists the RRO sites, RRO waves, and source of leadership for the seven RROs.

Table 1
Regional Rollout Study Sites

	Regional Rollout Wave	Internal Leadership	Market Size
Atlanta, GA	1	Coalition	Large
Dallas/Ft. Worth, TX	2	Coalition	Large
Rochester, NY	2	Health Plan	Medium
Savannah, GA	2	Coalition	Small
Seattle, WA	1	Employer	Large
St. Louis, MO	1	Coalition	Large
Madison, WI*	2	Coalition	Small (large)

*Expanded to include most of Wisconsin.

Key Informant Interviews

Our primary data source consisted of on-site interviews with 90 key stakeholders in the study communities from August 2003 to February 2004. The 1-hr interviews were conducted by two investigators at each site. We chose this approach because few details about how LF evolved at the local level were known, and we believed that the perspective of a diverse set of stakeholders within a given site was needed to understand how hospitals had responded to the RRO and the factors that influenced hospital responses. Respondents included hospital administrators (e.g., hospitals' chief medical officers or medical directors, and hospitals' quality assurance coordinators), participating employers, local RRO staff, representatives from local and national insurance carriers, and representatives from other relevant community organizations or industry groups such as hospital associations, or state-level hospital reporting initiatives.

Common, structured protocols were used to guide the interviews, with separate protocols used for respondents in different positions. The protocols were designed to collect information regarding the nature of each site's RRO effort, the responses of hospitals to that effort, and community and hospital characteristics influencing hospital responses. Initial versions of each protocol were reviewed by two individuals from the relevant stakeholder groups (e.g., hospital administrators), and revisions were made according to the feedback received. We targeted interview respondents by reviewing information regarding the dynamics of the local health care market, as well as the evolution of the RRO initiative in each market. Respondents included both supporters and skeptics of the LF RRO effort.

All respondents were assured that their responses would be treated confidentially. We took handwritten notes and also tape recorded each interview, using both to produce summaries of the interviews. Finally, from May to August 2006, we again interviewed, in person or by telephone, the RRO leaders at the seven sites. We used these interviews to update information on RRO efforts and hospital responses in the communities and to provide a longitudinal perspective on RRO activities. (One site no longer had an RRO leader, so we conducted a repeat interview with a state hospital association representative.) To track ongoing developments at the study sites, we regularly participated in monthly conference calls and attended in-person meetings with LF rollout leaders over a 3-year period (through summer 2006).

In addition to the qualitative data regarding hospital support for the RROs drawn from the interviews, we tracked participation over time in LF's survey as a quantitative indicator of initial support for LF. The survey also provided data on actual leap implementation by hospitals–the intermediate goals portion of the logic model. (In the Appendix, we describe how hospitals reported implementation on the survey.)

Analytic Approach and Limitations

In assessing hospital responses to LF in the seven study communities, we followed standard approaches to qualitative data analysis (see Britan, 1978; Firestone & Herriott, 1983; Gillham, 2000; Glaser & Strauss, 1965; Greene & David, 1984; Ragin, 1999; Weiss & Rein, 1970; Yin, 1993). We reviewed documents provided by the LF national office and LF's director of the RRO effort, media reports, and results from LF hospital surveys. Based on these documents and our initial data collection efforts, we constructed brief case studies of each site (available by request from the lead author), which were reviewed for accuracy, though not endorsement, by a subset of respondents and by LF staff at the national level.

Two of the authors independently analyzed the interview data collected at each site. Within a site, we compared responses to the same topic from different types of interview respondents in order to identify areas where perceptions differed and areas of consensus. Factors were identified within each site that appeared to influence hospital responses to the RRO effort, and these findings were compared to expectations, based on prior research, as described above.

There are limitations to the conclusions we can draw from our study approach. First, as in all multisite case study designs in which the "participant" cases are to some extent volunteers, the experiences in the sites in our sample may generalize neither to all RRO communities nor certainly to communities that were not designated RRO sites. This is a particular concern because the employer-leaders in the first two rounds of the RRO effort could be regarded as "early adopters" who were especially supportive of LF and its goals and believed that there were features of their communities that would facilitate a successful RRO. In contrast, employers who led later RRO efforts, or chose not to participate, may have felt that there were substantial barriers to success in their communities. Second, responses of hospitals to the LF RRO efforts are likely to be shaped by environmental changes not related to LF. In an attempt to identify when this may have occurred, we used the frequent tracking of secondary data and statistics, as well as the follow-up interviews. Third, the changes sought by LF may take much longer than 4 to 5 years to accomplish, so the findings of this study should be interpreted as early responses on the part of the hospitals in the study communities. Nevertheless, it seems plausible that the direction charted during the first 5 years is highly relevant in projecting outcomes beyond that period.

Results: Survey Participation and Factors Influencing Hospital Support for LF Efforts at the Community Level

Hospital Survey Participation

As Figure 1 illustrates, the initial measure of LF success is the degree to which hospitals that are located in RRO areas respond to the LF safety survey as requested. The response rates for each of the five reporting periods (beginning in June 2001) for the LF hospital survey are displayed in Table 2 for each of the study sites, along with the average response rate for all of the RRO sites (excluding study sites) operational at the time of each survey. With the exception of the St. Louis RRO, the study sites have generally had higher rates of survey participation than the average non-study site. Two general observations can be made concerning response rates at the study sites. First, the study sites seemed to fall into three groups based on their response rates in the initial reporting period: three sites that began with 100% hospital response (i.e., high response rate sites), three sites that had response rates of 64 to 83% (i.e., intermediate response rate sites), and one site with a very low initial response rate. Second, there was little or no improvement in hospital participation in the LF survey over time. In fact, in five of the seven study sites the percentage of hospitals responding to the LF survey declined from period one to period five. In some sites, this appears to be a consequence of an increase in the number of hospitals targeted by RROs for survey completion over the five reporting periods, with newly targeted hospitals declining to participate. The decline may also be caused by the addition of a fourth leap by LF in 2004, the safe practices leap, which increased the hospital survey length and the public exposure of hospital practices.

High Initial Response Rate Sites

While three sites had 100% response rates for the first round of the LF survey, in the Seattle and Savannah sites the high survey response rates were not associated with hospital collaboration in RRO planning and other

activities. In Rochester, however, there was evidence of hospital support for the RRO effort, and there are several factors that explain early hospital support for LF in Rochester.

Table 2
Hospital Participation in Leapfrog Survey[a]
(Percentage of Targeted Respondents)

	Reporting Period				
	1	2	3	4	5
Atlanta, GA	73.3	67.9	62.5	58.1	44.2
Dallas/Ft. Worth, TX	63.6	63.2	54.8	64.0	61.5
Rochester, NY	100.0	100.0	75.0	33.3	50.0
Savannah, GA	100.0	60.0	60.0	50.0	75.0
Seattle, WA	100.0	100.0	88.4	77.4	90.0
St. Louis, MO	3.2	21.9	17.1	20.0	11.8
Madison, WI[b]	83.3	80.0	88.4	73.4	77.4
All other regional rollouts	58.5	59.4	53.5	56.4	57.1

[a]Survey participation rates are calculated based on responses regarding CPOE progress, a leap which is applicable to all hospitals. The number of hospitals targeted by regional rollout leaders changes from reporting period to reporting period. The five reporting periods are 06/30/2001 to 04/04/2003, 04/07/2003 to 04/19/2004, 04/26/2004 to 03/15/2005, 03/18/2005 to 03/15/2006, and 03/16/2006 to 02/28/2007.
[b]The Wisconsin Regional Rollout expanded from five hospitals in south central Wisconsin in survey 1 to over 40 Wisconsin hospitals in surveys 2 through 5.

First, actors in Rochester's health care system have participated collaboratively in planning and reform activities for three decades, and there was an organization in place (Rochester Health Care Forum) with a committee structure that facilitated discussion of the LF RRO effort. Initially, employers did not feel that this organization was devoting the appropriate attention to LF, but changes were made to address their concern. Second, the administrative direction for LF in Rochester was provided by a health plan representative who was trusted by employers and providers. Because of its dominant market position, the plan, in effect, consolidated purchasing power in the community, functioning as an employer coalition might in representing employer interests in other communities. And, because of the substantial market share held by the plan, if it were to make changes in its benefit design to support LF, this would have a major impact on all community providers.

Third, hospitals in the community had made progress on the CPOE and intensivist leaps prior to designation of Rochester as an RRO site. The survey provided an opportunity to bring this progress to the attention of the community as a whole. The combination of these three factors led to a 100% response rate for the first two periods and a 75% response rate for the third period. By the fourth period, however, the organization that managed the RRO effort had dissolved, no local employers had assumed leadership responsibility, and reporting declined.

In contrast to the complex community dynamic around LF in Rochester, response rates were high in Seattle and Savannah primarily because of the aggressive approaches taken by employer RRO leaders. Boeing, the LF RRO leader in Seattle, met with representatives of community hospitals to convey its intention to adopt a new benefit design that would "steer" employees to hospitals that did well in meeting LF leaps. Although some hospitals characterized this as "heavy handed," 100% of hospitals completed the LF survey in periods one and two and reporting remained high through period five. Seattle is the only RRO among the seven study sites where an employer actually incorporated financial incentives in its benefit design that rewarded employees for selecting hospitals that met LF standards (Scanlon, Lindrooth, & Christianson, 2007). However, in recent negotiations with its unions, Boeing reduced the number of employees exposed to these incentives.

Savannah employers used a different, but equally aggressive, purchasing strategy that encouraged hospitals to report progress on the LF leaps. The RRO leader—the Savannah Business Group on Health (SBGH)—purchases health care for about 20% of employees in Savannah. At the time the RRO was initiated, the SBGH

utilized a structured contracting process that encouraged competition between the two local hospital systems, negotiating a contract with the winning system. Because it was willing to direct its business to a single hospital system, the SBGH had leverage in influencing hospitals to report their progress in meeting LF standards. Also, the contracting process had established a pattern of hospital performance reporting prior to the LF RRO. Although all Savannah hospitals responded to the initial LF survey, one hospital raised concerns about the legitimacy of other hospitals' responses to survey questions and contacted LF's national office. By period four, there was increased hospital resistance to reporting, even among hospitals contracting with SBGH.

Intermediate Initial Response Rate Sites

Three other study sites had initial survey response rates that did not reach 100% but still exceeded the average of the RRO sites not in our study. Wisconsin had an 83% response rate initially that grew to 88% by the third survey, even though the number of targeted hospitals increased during this period as the focus moved from the Madison area to the entire state. The Wisconsin RRO benefited from the leadership of the Employer Health Care Alliance Cooperative, an experienced employer coalition; a relatively sophisticated hospital community with respect to patient safety and public reporting; and a history of public reporting of hospital performance. As one respondent observed, "the battles already had been fought" regarding quality measurement and public reporting prior to the RRO effort, and the LF hospital survey was relatively uncontroversial. Where hospital opposition existed, it tended to focus on technical issues regarding construction of some measures.

Atlanta had a 73% hospital response rate for the first reporting period, declining to 44% by the fifth period. There are over 40 hospitals in Atlanta, although 20 are concentrated in four systems, with the largest system having a 15% market share. In Atlanta, the LF RRO leader attempted to take advantage of the competitive hospital market by striking ". . . an agreement with the area's largest hospital system, Promina, to implement LF's three original patient safety practices by the end of 2004" (The Leapfrog Group, 2004; Weber, 2001). Promina supported LF's agenda in the national press and publicly expressed its support for the RRO effort in Atlanta. While promising at first, this agreement lost its impact when Promina split into three separate entities. Also, from its inception, the Atlanta RRO faced problems in maintaining strong and consistent employer leadership and in recruiting employers to its cause. Initially, the Georgia Healthcare Leadership Council (GHLC) was the designated RRO leader, but two major Atlanta employers, Delta and UPS, felt that the RRO wasn't receiving sufficient attention from the Council. The GHLC assumed responsibility for the RRO, although they lacked a staff or organizational structure to carry out RRO activities. Delta faced significant financial problems, while UPS employees were dispersed throughout the United States, even though Atlanta is its corporate headquarters. In sum, the beneficiaries from both companies generate a very small portion of hospitalizations in Atlanta.

Aside from Promina, hospitals were not involved in a collaborative process around the RRO in Atlanta, and the Georgia Hospital Association criticized LF for failing to involve the Association in the RRO. Its Partnership for Health Accountability provided an alternative to the RRO for member hospitals with respect to patient safety and quality improvement efforts (Rask, Naylor, Schuessler, 2005). Despite these challenges, survey participation by Atlanta hospitals was relatively strong initially. Several major hospitals had committed to CPOE implementation prior to the LF RRO, and others were making use of intensivists, or intended to do so in the near future. For them, the LF survey was an opportunity to publicize these efforts. Tenet, a national for-profit hospital company, was committed to LF at the national level and had nine owned or affiliated hospitals in Atlanta. As a matter of corporate policy, its hospitals completed the LF survey. Over time, however, reporting declined, shrinking to 44% by the fifth survey period, as the Atlanta RRO lost its leadership and momentum. Hospital respondents, in general, were skeptical that they would benefit from leap compliance through either increased volume or better payment rates. Some also questioned the scientific validity of the standards and saw the LF agenda as "too ambitious."

In many ways, the interplay of factors that influenced hospital support for the LF RRO was the most complex in DFW. There are over 50 hospitals in DFW, and 73% are affiliated with four different systems, making DFW a relatively concentrated market. There is an experienced employer leader for LF—the DFW Business Group on

Health (BGH)—which represents about 700,000 of the 5 million DFW residents. It has several ongoing programs, including a patient safety initiative, but no history of joint purchasing and only limited performance reporting. There is also a DFW hospital association, which initially organized hospital opposition to the RRO. This opposition was broken when the CEO of one of the largest hospital systems decided to endorse the LF efforts at a health care "summit" convened by DFW employers. Subsequently, the CEOs of the hospital systems agreed to chair committees formed by the BGH to determine how the hospitals would address aspects of care related to the three leaps. The BGH chose this approach, rather than pushing for strict adherence to the leaps, because hospitals demanded that local standards be developed. This represented a deviation from the logic model illustrated in Figure 1. In the end, these groups could not achieve broad consensus on how to move forward, though hospital reporting has remained relatively stable in DFW.

Low Initial Response Rate Site

The lowest response rate in the first reporting period occurred in St. Louis, where there are four large hospital systems but relatively few locally based large corporations. The largest hospital system, with over 30% of the market, also is the largest employer in St. Louis. It publicly opposed the LF rollout and hospital reporting on the LF leaps, with the other hospitals following its lead. Consequently, only one hospital reported in the first period. By the fourth period, the response rate had increased to 20%, primarily because Tenet endorsed LF at the national level and required its hospitals in St. Louis to complete the survey. At the end of the fifth period, reporting had regressed to 12%. The RRO leader in St. Louis is an employer coalition with a relatively active purchasing history. However, its relationships with local hospitals, and particularly with the largest hospital system, sometimes have been contentious. At the time it became RRO leader, the coalition had an existing contract with a single health plan that was associated with a large hospital. This hospital was the sole responder in the first reporting period. Not only did the hospital have a prior connection with the RRO leader through a purchasing contract, but it also saw public reporting as a way to differentiate itself from its nonreporting competitors in St. Louis. Other hospitals in St. Louis doubted the "staying power" of the LF RRO. One respondent noted that the employer group was often proposing new initiatives, replacing one with another. Thus, the inability of LF to engage hospitals in its RRO effort in St. Louis reflected a consolidated hospital market and aggressive opposition on the part of the dominant local hospital system; the absence of large, locally based employers in the non-health care sector of the economy; and a history of fractious employer-hospital relations that caused hospitals to be relatively pessimistic regarding the potential for RRO success. The lack of large employer involvement was particularly noteworthy given that Boeing, which led Seattle's RRO, also had a large manufacturing presence in St. Louis.

Summary: Hospital Survey Participation

In our study sites, with the exception of St. Louis, the LF RRO efforts resulted in relatively high early response rates to the LF survey. Thus, the LF RROs accomplished an important short-term goal in the LF "logic model." Local market factors played varying roles in the decisions of hospitals to support RRO activities and respond to the LF survey. Organized and/or aggressive employers were important in Seattle and Savannah, while a history of collaborative work around health system reform and public reporting appears to have been significant in Rochester and Wisconsin. Opposition from the dominant hospital system in one market (St. Louis) was a key factor in explaining the low hospital response rate there.

While market factors influenced hospitals' reporting decisions in a variety of ways, there were other factors that exerted similar influences across study sites. First, in all communities, the reporting of performance information on the three leaps was not particularly difficult for hospitals to do. The efforts of LF at the national level to facilitate reporting online reduced the direct costs to hospitals of reporting. Second, irrespective of the communities in which they were located, hospitals did not expect that reporting would alter patient choices of hospitals in any direct way, given the other considerations that enter the hospital selection decision and, especially, the growing number of (nonleap) hospital metrics that were available to consumers. Third, hospitals in every community were skeptical that local employers, or their health plans, would use the information in the survey to reward employees, through benefit design, for using specific hospitals. In short, completing the LF survey and expressing public support for the LF RRO were low-cost, low-risk activities for most hospitals in

every study site. While many saw little to gain from these efforts, they also felt that there was little risk involved.

Table 3
Hospital Performance on Leapfrog Leaps (Percentage of Targeted Respondents)

	Reporting Period	Did Not Disclose	Does Not Meet	Good Early Effort	Good Progress	Meets Leap Standard (7 regions)	Meets Leap Standard (other Regional Rollouts)	Total *N* (7 regions)
Computer physician order entry	1	38.5	41.8	15.0	4.5	0.0	3.4	153
	2	31.6	45.2	11.3	10.8	0.9	3.2	212
	3	37.0	48.1	10.6	2.7	1.3	3.9	216
	4	40.7	55.2	0.0	1.9	1.9	4.5	255
	5	41.6	53.2	0.0	1.7	3.4	5.5	233
Intensivist	1	39.8	34.9	10.4	0.6	13.9	12.6	143
	2	34.5	43.8	5.6	0.5	15.4	13.0	194
	3	38.7	42.5	4.7	0.4	13.3	12.8	209
	4	40.3	38.0	8.4	1.9	11.1	16.0	260
	5	42.3	37.9	3.0	0.0	16.5	17.6	229
Coronary artery bypass surgery	1	—*	—*	—*	—*	—*	—*	95
	2	50.7	10.1	17.1	16.4	5.4	4.4	128
	3	53.5	4.2	22.5	16.1	3.5	3.8	142
	4	59.5	3.5	16.6	17.8	2.3	3.7	168
	5	58.0	4.3	17.9	16.0	3.7	3.1	162
Abdominal aortic aneurysm	1	—*	—*	—*	—*	—*	—*	132
	2	40.3	21.7	20.4	15.5	1.8	1.8	161
	3	42.2	16.1	26.6	13.3	1.6	1.6	180
	4	45.0	21.5	18.5	10.5	4.5	2.9	200
	5	48.7	21.2	15.5	11.9	2.5	1.9	193

*Reporting period 1 is omitted for CABG and AAA because the measurement definitions were significantly different from reporting periods 2 through 5.

Results: Factors Influencing Hospital Progress in Achieving the LF Leaps

In contrast to their widespread participation in the LF survey, hospitals in the study sites have shown much less progress than LF hoped for in accomplishing any of the leaps (see Table 3). In some cases, there has been regression from the first survey period to the fifth, though it is important to note that the regression from the first to second survey for coronary artery bypass surgery (CABG) and abdominal aortic aneurysm repair (AAA) is caused by a change in the way LF measured the standards. By and large, hospitals that met LF standards at the end of the study period were doing so prior to the first survey, while a few other hospitals progressed toward meeting LF standards.

Based on our interviews, it appears that the lack of wide-scale improvement with respect to the leaps was caused in part by the nature of the leaps and the demands they placed on hospitals rather than specific community factors. Two of the three patient safety targets (leaps) chosen by LF proved very difficult, from a budget and a strategic perspective, for hospitals to address in a short time period. The installation of CPOE is potentially quite costly, and therefore hospitals typically consider it in the context of their long-term budgeting processes and in conjunction with other information system changes. Investment in CPOE competes with hospital investments in expansion of capacity, pursuit of joint ventures with physicians, and the purchase of other new technologies, all of which can have an immediate, positive impact on hospital revenues. At the time the first LF RROs began, hospitals questioned the cost and effectiveness of CPOE (Kuperman & Gibson, 2003), and many respondents believed that they already were pursuing less expensive, potentially more effective, methods of improving the safety of medication ordering and administration.

Meeting the volume standards for surgery was even more problematic for many hospitals. Hospitals that fell 100 to 200 procedures short of the CABG standard of 450 procedures annually, for example, faced the option of hiring or recruiting more surgeons to increase their volumes (with volume increases potentially coming at the expense of hospitals already meeting the standards, risking noncompliance with the standards on the part of these hospitals) or eliminating surgical capabilities and essentially any chance to re-establish them in the future. Some hospitals that were near the standard did adopt a growth strategy, but most dismissed the volume standards as impractical and naive. Instead, they questioned the evidence base for the volume standards and called on LF to measure risk-adjusted surgical outcomes, instead of volumes (Shahian, 2004). When LF responded by lowering the threshold for CABG and instituting outcomes standards where data were available, some hospital respondents saw this as evidence that LF was acknowledging the validity of their concerns.

A second factor that helps explain the lack of hospital progress in achieving the LF leaps also is not unique to individual communities. Specifically, LF was one of many organizations pursuing quality improvement efforts, including efforts to reduce medical errors, during the study time period (Altman, Clancy, & Blendon, 2004; Devers, Pham, & Liu, 2004; Leape & Berwick, 2005). The existence of multiple national and state efforts was useful to LF in that it kept the national spotlight on its mission—the reduction of medical errors. However, it also meant that, in the words of one respondent, LF quickly became "old news" to hospitals and employers; while it was initially viewed as "innovative," it came to be seen as less important than other national efforts. Some national hospital systems chose to support LF's mission, encouraging their member hospitals to support local RRO efforts. However, at the community level, many hospitals chose to participate selectively in national and state quality improvement and patient safety efforts (e.g., the Institute for Health Improvement's "100,000 Lives" initiative) where they had the best chance of performing well and were not required to report their performance publicly. In essence, the existence of multiple alternatives for hospitals at all study sites allowed hospitals to "opt out" of LF, while still demonstrating to community leaders, employers, consumers, and their own employees a commitment to patient safety.

A third factor that varied little across study communities was the skepticism of hospital administrators that local employer leaders of the LF RRO effort would create significant financial incentives or rewards for hospitals. (Galvin, Delbanco, Milstein, & Belden [2005] comment on this from a national perspective as well.) As a result of their experience with employer involvement in previous health reform efforts in their communities, hospitals had concluded that employers have "short attention spans" when it comes to specific health care initiatives.

Furthermore, many respondents noted that there were few large local employers capable of affecting them in a material way through benefit redesign, and that local employer coalitions would not be able to secure agreement among members to do joint purchasing based on LF performance. As a result, they saw few, if any, financial consequences for not demonstrating progress in meeting LF standards.

Implications For Health Policy, Practice, and Reform

Based on the expectations embedded in the logic model (Figure 1), LF's RRO strategy can be viewed as successful in some dimensions and disappointing in others. In all but one of the study communities, the majority of hospitals reported their performance regarding the LF leaps, adding to the growing body of public information comparing hospital performance in general. Questions can, and have, been raised by hospitals about the choice of leaps and the specification of standards. However, LF's efforts advanced the discussion of patient safety at the local level and provided interested employers with a "place at the table" in that discussion. At the national level, LF has expanded its reporting efforts, as well as the number of hospitals targeted for reporting. The challenge now is for existing RRO leaders to maintain the commitment of local hospitals to reporting over time, and to move hospitals further to the right hand side of the logic model. In this regard, LF RRO leaders seemingly face a "chicken and egg" problem. Hospitals are less likely to invest scarce resources in meeting LF standards, and in reporting their progress in that regard, when they do not see evidence that meeting these standards (or not meeting them) has financial consequences. Suzanne Delbanco, the chief executive of LF, has observed that ". . . asking hospitals to report their progress publicly has probably spurred them to move more quickly. But . . . the safety practices the group is promoting publicly probably won't catch on more widely until employers and insurers tie hospital payments to quality and safety—or provide financial incentives for patients to choose the safest hospital." ("Hospitals make fewer errors," 2004). However, employers are not likely to press very hard for "tiered" benefit designs that encourage employees to use LF-compliant hospitals when there are too few hospitals meeting LF standards to make such a product viable.

The lack of progress on the part of hospitals in the study sites in meeting the LF standards may not present a complete picture of the impact of RROs on local hospitals. A significant number of hospital respondents—especially hospital medical directors and quality assurance officers—credited the LF RRO effort with increasing their leverage in negotiations over strategic and budget priorities within their organizations. It helped them push a patient safety agenda for their hospitals, even though that agenda ultimately may not have focused on meeting LF leap requirements. As a result, these respondents felt that the RRO effort had improved patient safety in their hospitals, albeit indirectly.

While the LF RRO effort appears to have increased the availability to consumers of information on patient safety initiatives in local hospitals, elevated the discussion of ways to improve patient safety, and provided impetus for some hospitals to move more quickly in implementing patient safety initiatives, the lack of reported improvement on LF measures raises important questions (Galvin et al., 2005). Based on our interviews in the RRO communities, we believe that one question relates to the validity of the logic model that undergirds the RRO effort. The assumptions of this model may not adequately reflect the current balance of power in purchaser/provider relationships at the community level. The health services research literature suggests that this balance has shifted over the last decade (Bazzoli, Anneliese, & May, 2006; Capps & Dranove, 2004; Christianson & Trude, 2003; Devers et al., 2003; Mays, 2003; Nichols, Ginsburg, Berenson, Christianson, & Hurley, 2004). The employer "value-based" purchasing model for health care (Christianson, 1997; Maxwell, Temin, & Watts, 2001; Meyer, 1996a, 1996b), as advocated by many benefits consultants and practiced by some large employers in the 1990s (Galvin & Delbanco, 2005), envisioned local markets in which employers worked with their health plan agents to secure concessions on cost and other contract features from hospitals. This vision implicitly assumed a hospital market in which multiple hospitals competed for patients, and where employers had substantial numbers of employees and dependents that they were willing to "deliver" to one hospital or a subset of hospitals. While this situation still exists in some communities (e.g., in Savannah) most community health care systems have evolved in another direction.

The new landscape of local health care systems has several features that are not supportive of the LF logic model. First, hospitals have consolidated into systems at the local level (Capps & Dranove, 2004; Cuellar & Gertler, 2003; Devers et al., 2003; Nichols et al., 2004) and are now more formidable negotiators with health plans. Their increased power derives not only from market consolidation, but also from a shift in the purchasing strategies of employers. Partly in response to "managed care backlash" in the mid-1990s, employers have come to favor broad-network PPO plans that provide more choice of providers for their employees (Christianson & Trude, 2003; Robinson, 2004). Virtually all hospitals are now available to employees, as either in-network or out-of-network providers, irrespective of the health plan offered by employers (Robinson, 2004). In some communities, every hospital participates as an in-network provider in virtually every plan. Health plans try to create networks that include all of the hospital systems in a community because omitting a system, with its multiple hospitals, can leave a large hole in the network. However, this leaves them with limited leverage in their hospital negotiations. Today, these broad-network plans continue to dominate local health plan markets. New "consumer-directed" benefit designs also utilize contracted networks of providers that are very inclusive. Even where employers have expressed interest in "tiered network" products (which theoretically could place hospitals in different tiers to reflect hospital performance on LF leaps), health plans have been slow to offer them (Robinson, 2003; Mays, 2003). Plans are concerned that placing hospitals in tiers could jeopardize their contract negotiations with hospitals for the more popular preferred provider organization (PPO) products. At the local level, there are few employers large enough to justify health plans taking this risk.

This suggests a second significant departure in local health care market characteristics from assumptions of the logic model; in the study sites, there were relatively few private-sector, non-health care employers with large numbers of employees concentrated in the RRO community. At the national level, LF was created by Fortune 500 employers. These companies have large numbers of employees nationally and globally, and their actions command the attention of the national media. However, this does not mean that they have significant health care purchasing power at the RRO community level. In our study sites, the hospital systems themselves along with local and state governments and school systems typically had the largest number of locally based employees. Even when the RRO leader was a well-known national firm, its local employees represented a very small proportion of the potential demand for hospital services. Some employers were effective in securing attention and media coverage for local LF efforts, but did not have the capability of delivering significant numbers of patients to hospitals meeting LF standards. Employer coalitions in other communities had that potential, but did not have a history of joint purchasing. With respect to health care purchasing, the large employers in the study sites were under pressure to show immediate reductions in their health costs, which they were pursuing by redesigning benefits to shift more costs to employees. Benefit designs that favored LF compliant hospitals in tiered networks had the potential to deliver cost savings by reducing medical errors, but this was much less certain and not likely to address employers' immediate needs to reduce health care spending.

The findings of our analysis reinforce the findings of other recent studies of health system change at the community level. Our findings suggest a careful reassessment of expectations concerning the ability of private employers, through collective action, to play significant roles in changing the actual delivery of care in local health care systems. However, large employers can continue to exert significant influence on health care policy at the national level. In fact, their greatest strength may be in focusing public attention on the need to address flaws in the U.S. health care system, which LF did quite effectively. Employers also have an important role to play in spurring innovations in benefit designs and providing relevant information to support employee health care choices.

Appendix

Leapfrog (LF) Assessments of Hospital Progress in Meeting LF Leaps

The LF survey provides information on hospital self-reported progress in meeting LF safety leaps. Beginning in the spring of each year, hospitals are given the opportunity to "refresh" the information that they provided in the previous year. The survey results then are released monthly from July through March. Hospitals answer a series of questions regarding each leap, and LF converts their answers into summary measures of performance on the LF Web site. It was presumed in the LF logic model that the summary measures would be used by RRO

employers in their communications with employees about comparative hospital performance. Hospitals that achieve a leap are designated by a completely shaded circle. A three-quarter circle indicates "good progress," while half a circle means "good early stage effort" and a quarter circle is "willing to report." A blank circle indicates that a hospital was invited to report progress, but chose not to do so. Results also note where hospitals are not expected to respond. (For instance, a hospital would not respond to the survey questions about use of intensivists if it did not have an intensive care unit.)

The exact criteria used to place a hospital in one category versus another vary with the leap, but the bar is set fairly low to be classified as "good early stage effort." For example, regarding use of intensivists, it simply indicates that the hospital commits to meeting the standard at some specified future date, and the hospital's board has approved a budget sufficient to accomplish this goal. In this case, half the circle would be shaded, even though this hospital would, at the time the survey results were reported, presumably be no safer for patients than a hospital with an empty circle. In contrast, again using "intensivists" as an example, "good progress" (three quarters of the circle shaded) represents a considerable step beyond "good early effort." In a hospital with this designation, all patients in adult and pediatric intensive care units are managed by physicians certified in critical care medicine and the hospital meets some, but not all, of LF's additional requirements regarding availability of an intensivist.

Since the first reporting period, the leaps have been modified in response to concerns expressed by hospitals about the real-world barriers to achieving leaps, hospital skepticism about the connection between the leaps and patient safety improvement, and hospital advocacy for inclusion of other measures of patient safety. For instance, with respect to volume leaps, LF decided to accept outcome measures for some procedures when these data were collected and published by state governments. LF also dropped one volume-related measure, and it reduced the volume cut-off on another (coronary artery bypass surgery). A fourth leap, a composite indicator of the presence of practices believed to relate to quality of care, was introduced in 2004. In this study, for reasons of continuity and the ability to trend over an extended period of time, we focused on the first three leaps.

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